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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/765,229	01/18/2001	Koujirou Sekine	15162/03060	7378

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EXAMINER

STAHL, MICHAEL J

ART UNIT PAPER NUMBER

2874

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/765,229

Applicant(s)

SEKINE ET AL.

Examiner

Mike Stahl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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This office action is in response to the amendment filed 25 March 2003. The changes to the claims have been entered. Claims 1-20 are now pending. All claim objections and rejections made in the last office action are withdrawn in view of the amendment.

Drawings

The originally filed drawings are considered acceptable by the examiner.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claim 4 originally recited that the periodic structure is formed by elastic waves, while the periodic structure is varied by altering the frequency of the elastic waves. This operation was adequately supported by the written description pertaining to fig. 8 (p. 12 lines 2-16). However, applicant has amended claim 4 to recite that the refractive index of each recurrence of the second refractive index portion is varied by elastic waves. This is not supported by the original disclosure. It is the elastic waves which create the second refractive index portions in the first place. When the elastic waves are turned off, the second refractive index portions cease to exist.

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There is no disclosure of changing the refractive index of the second portions themselves, once they are created, by varying the elastic wave frequency. The only variation in the periodic structure attainable by changing the elastic wave frequency is a change in the spacing of the second portions. New claim 19 is rejected under the same basis as claim 4, noting that although claim 19 omits "elastic" it is evident that elastic waves are the only waves supported in this context.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5-17, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Roberts (US 6175671, cited in the last office action).

Roberts discloses a device (figs. 6 and 7) comprising a periodic structure (generally region 21 of fig. 6, which includes subregions 38 and 39 in fig. 7) with a first refractive index portion (slab 2) and a plurality of second refractive index portions 22 disposed in a periodic pattern relative to the first index portion. Each recurrence of the second index portion has a variable refractive index (col. 5 line 57 – col. 6 line 16). The device includes a waveguide

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portion 11 which directs light to the periodic structure. A controller for controlling the refractive index of the second index portions 22 is not illustrated in figs. 6 or 7 but is inherently present. Thus the device just described satisfies the requirements of independent claims 1, 6, 9, and 16. As to independent claim 11, it is considered inherent that a variable light wavelength source is coupled to the periodic structure of fig. 6, since the fig. 6 device acts as a wavelength filter (see e.g. col. 7 lines 1-4 and the description associated with fig. 4). Claim 12 is satisfied by virtue of waveguide portion 11 mentioned above.

As to claims 2, 8, 10, 15 and 17, the material of lattice points 22 (e.g. ferrite) exhibits an electrooptic effect which may be controlled by an externally applied voltage (col. 5 line 67 – col. 6 line 31). A voltage applying portion is not shown in figs. 6 or 7 but inherently exists.

As to claims 5 and 20, the periodic structure is two-dimensional.

As to claims 7, 13, and 14, the device further includes a second waveguide portion 12 and a third waveguide portion 13 for guiding light exiting from the periodic structure portion 21.

Claims 1-3 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Gerritsen (US 4850682).

Gerritsen discloses a device (figs. 1A and 1B) comprising a periodic structure having a first refractive index portion 11 and a plurality of second index portions (i.e. the inverse regions of grating 12 which are filled in with liquid crystal material 19) which recur in a periodic pattern relative to the first index portion, wherein each recurrence of the second index portions has a variable refractive index (col. 3 line – col. 5 line 7). The index of the second index portions is

controlled by varying the voltage from a source 20. The Gerritsen device thus satisfies the limitations of claims 1-3 and 16-18.

Response to Arguments

Applicant's comments regarding the rejections made in the last office action are persuasive in view of the amendments to various claims. In particular, applicant emphasized that the periodic device has a first index portion and a plurality of periodically arranged second index portions, wherein the second portions have a variable index. This clearly distinguishes over the previously applied Koops reference which discloses changing the index of the background material, not the lattice points. Hatori provides a first index portion, and second index portions are induced by acoustic waves, but the index of the second portions is not separately adjustable. Utaoka discloses only adjusting the index of a waveguide layer which is physically distinct from the layer in which the grating is defined.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5299037 discloses a liquid crystal-based variable diffraction grating.

Any inquiry concerning this communication should be directed to Mike Stahl at (703) 305-1520. Official communications eligible for submission by facsimile may be faxed to (703) 308-7724 or (703) 308-7722. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at (703) 308-0956 or to the technical support staff supervisor at (703) 308-3072.

MJS

Michael J. Stahl
Patent Examiner
Art Unit 2874

16 June 2003


Rodney Bovernick
Supervisory Patent Examiner
Technology Center 2800